

REMARKS

Applicants have amended claims 1, 7, 14, 19, 25, 33, 35, 37, 40 and 42, and have canceled claims 6, 8, 9, 22 to 24, 28, 30, 31, 35, 36, 38, 39 and 47. Accordingly, claims 1 to 5, 10 to 21, 25 to 27, 29, 32 to 34, 37, and 40 to 46 remain pending in this patent application. Applicants now address each and every point raised by the Examiner in the above-identified Office action as follows:

I. Rejection of Claims Under Section 103

Claims 1 to 48 have been rejected under 35 U.S.C. § 103 as being allegedly unpatentable over Heinrich in view of the British Patent ('654 patent). As an initial matter, Applicants note that claims 6, 8, 9, 22 to 24, 28, 30, 31, 35, 36, 38, 39 and 47 have been canceled, thereby obviating the rejection as to these claims.

Additionally, Applicants have amended independent claims 1, 14 and 33 to more clearly recite the features of the invention. Namely, these claims have been amended to clarify that the low coefficient of thermal expansion (CTE) binder alloy be: (1) *iron based*; and (2) *consist essentially of Fe, Ni, Co, Mn and C*. This specific binder composition is well supported in the specification of the patent application and provides a binder alloy having the desired CTE characteristics recited in the claims.

Heinrich discloses a cermet insert having a Co-Ni-Fe binder and, more specifically, a WC cermet comprising a cobalt-based Co-Ni-Fe, where cobalt comprises 40 to 90 percent by weight of the binder. Applicants' low CTE cermet as recited in claims 1, 14 and 33 is distinguishable over Heinrich because: (1) it is *iron-based* and not cobalt based; and (2) it includes the further binder alloy ingredients of Mn and C. Heinrich neither discloses nor suggests these two invention features.

One reason why Heinrich can be said to actually teach away from using an iron-based binder alloy is because its focus is on providing structural bending strength, a feature characteristic of cobalt and cobalt-based binders. Heinrich does not disclose or suggest the formulation of a binder alloy to address the thermal expansion differential between the binder and the WC.

The '654 patent discloses a cemented carbide composition comprising a mixture of WC with an alloy consisting of Fe, Ni, Co and C. While this particular alloy is noted as containing a balance of iron, the '654 patent neither discloses or suggests the use of Mn. Again, as noted above, Applicants have amended independent claims 1, 14 and 33 to clarify that its binder alloy include Mn in addition to Fe, Ni, Co and C.

Since neither one of the two cited references alone disclose the two invention features noted above in independent claims 1, 14 and 33, the combination of these two references cannot operate to provide an invention feature that is missing in each. Accordingly, Applicants submit that one having ordinary skill in the art aware of Heinrich and the '654 patent would not be motivated to formulate the binder alloy as recited in amended independent claims 1, 14, and 33, and for that reason the composition recited therein would not be obvious based on the combination of these two references.

Accordingly, Applicants respectfully request that the rejection of independent claims 1, 14 and 33, and claims depending therefrom, under 35 U.S.C. § 103 be reconsidered and withdrawn.

With respect to independent claim 25, this claim recites a *three-phase* low CTE material that is neither disclosed nor suggested in the two references cited by the Examiner alone or in combination. For this reason, Applicants submit that its invention as recited in independent claim 25 is not obvious based on the combination of the two references, and respectfully request that the rejection of this claim, and the claims depending therefrom, under 35 U.S.C. § 103 be reconsidered and withdrawn.

With respect to independent claim 43, this claim recites an *ordered or oriented arrangement* of a two-phase low CTE material that is neither disclosed nor suggested in the two references cited by the Examiner alone or in combination. For this reason, Applicants submit that its invention as recited in independent claim 43 is not obvious based on the combination of the two references, and respectfully request that the rejection of this claim, and the claims depending therefrom, under 35 U.S.C. § 103 be reconsidered and withdrawn.


II. Conclusion

For the reasons presented above, Applicants respectfully request that the rejection of claims 1 to 48 under 35 U.S.C. § 103 be reconsidered and withdrawn, and that the claims now pending in this patent application be passed to allowance.

If any additional fees are due in this matter, please charge our Deposit Account No. 10-0440.

Respectfully submitted,

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GRANT T. LANGTON
Reg. No. 39,739

GTL/ke

JEFFER MANGELS BUTLER & MARMARO LLP
SEVENTH FLOOR
1900 AVENUE OF THE STARS
LOS ANGELES, CALIFORNIA 90067-4008
TELEPHONE: (310) 203-8080
FACSIMILE: (310) 203-0567

CUSTOMER NO. 24574